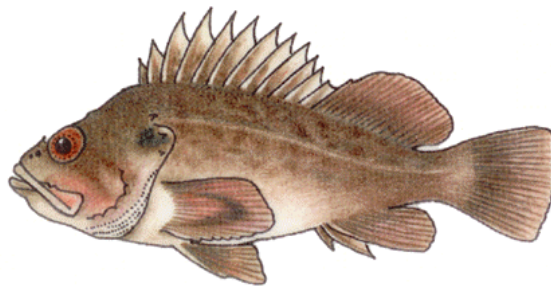


# Brown Rockfish, *Sebastes auriculatus*

## 1993-1999 Commercial Catch by Ports & Blocks



### **Marine Fishery Profiles**

*Volume 1: Nearshore*

Marine Region GIS Lab

Nancy Wright	Eric Knaggs
Jamie Kum	Bob Leos
Chad King	Colleena Perez



California Department of Fish & Game  
Marine Region

December 2000

## Santa Barbara



Catch - 3,148 lbs.



Revenue - \$5,983



Port Cities



Catch by Pounds



Revenue



Effort - Pounds per Trip



10 Nautical Mile Port Buffers



Brown Rockfish - Adult Range  
(5 to 135 Meters Depth)



1 Nautical Mile Coastline Buffer



40 Fathom Contour Line



50 Meter Contour Lines  
out to 600 Meters Depth

Brown Rockfish, 1993-1999  
Commercial Market  
Catch by Block (lbs.)



4,500 - 6,100



3,000 - 4,500



1,500 - 3,000



100 - 1,500

Map based on 1993-1999 PacFIN data (ports), and 1993-1999 California Department of Fish & Game Commercial Landing Receipts (blocks).

## Port of Los Angeles

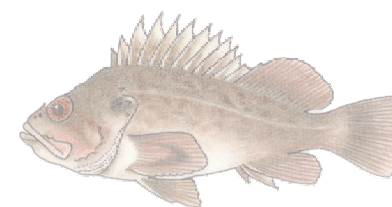


Catch - 961 lbs.



Revenue - \$899

## Southern California



Brown Rockfish, *Sebastes auriculatus*  
1993-1999 Commercial Catch by Ports & by Block  
California Department of Fish & Game

## San Diego



Catch - 1,445 lbs.



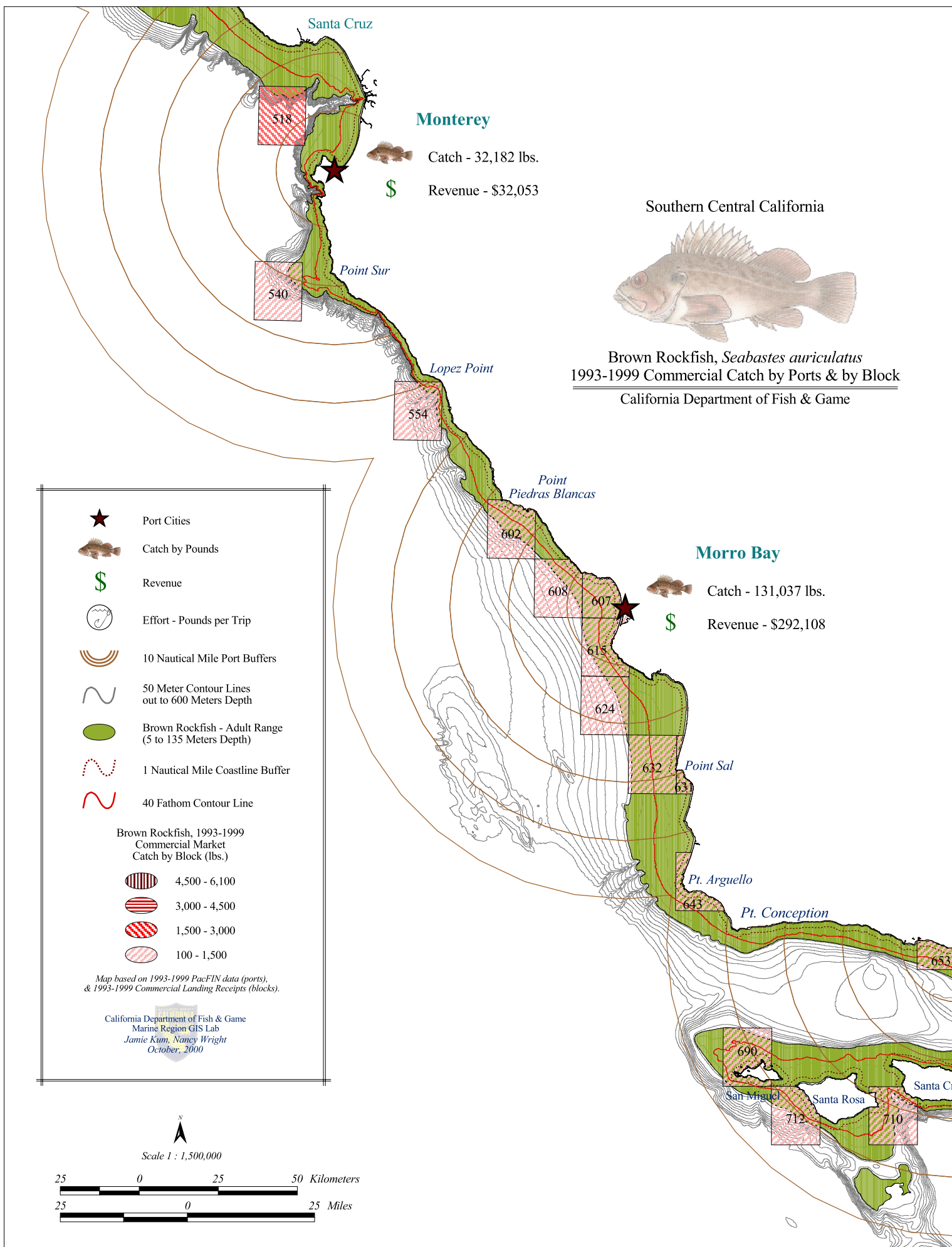
Revenue - \$1,397

Scale 1 : 1,500,000

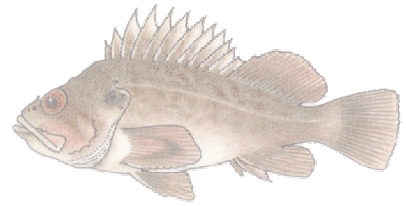
25 0 25 50 Kilometers

25 0 25 Miles

California Department of Fish & Game  
Marine Region GIS Lab  
Jamie Kum, Nancy Wright  
October, 2000



# Northern Central California



**Brown Rockfish, *Sebastes auriculatus***  
**1993-1999 Commercial Catch by Ports & by Block**  
 California Department of Fish & Game

## Bodega Bay

Catch - 182,051 lbs.

Revenue - \$222,539

## San Francisco

Catch - 413,222 lbs.

Revenue - \$666,448

## Half Moon Bay

## Santa Cruz

## Monterey

Catch - 32,182 lbs.

Revenue - \$32,053

- ★ Port Cities
- Catch by Pounds
- \$ Revenue
- Effort - Pounds per Trip
- 10 Nautical Mile Port Buffers
- 50 Meter Contour Lines out to 600 Meters Depth
- Brown Rockfish - Adult Range (5 to 135 Meters Depth)
- 1 Nautical Mile Coastline Buffer
- 40 Fathom Contour Line

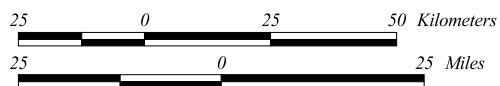
Brown Rockfish, 1993-1999  
 Commercial Market  
 Catch by Block (lbs.)

- 4,500 - 6,100
- 3,000 - 4,500
- 1,500 - 3,000
- 100 - 1,500

Map based on 1993-1999 PacFIN data (ports),  
 & 1993-1999 Commercial Landing Receipts (blocks).

California Department of Fish & Game  
 Marine Region GIS Lab  
 Jamie Kum, Nancy Wright  
 October, 2000

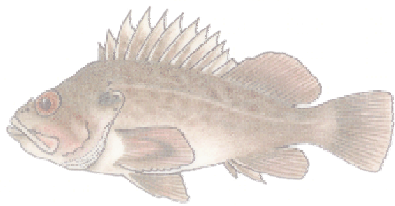
Scale 1 : 1,500,000



Point  
 Piedras Blancas



## Northern California



### Brown Rockfish, *Sebastes auriculatus* 1993-1999 Commercial Catch by Ports & by Block

California Department of Fish & Game

- ★ Port Cities
- Catch by Pounds
- \$ Revenue
- Effort - Pounds per Trip
- 10 Nautical Mile Port Buffers
- 50 Meter Contour Lines out to 600 Meters Depth
- Brown Rockfish - Adult Range (5 to 135 Meters Depth)
- 1 Nautical Mile Coastline Buffer
- 40 Fathom Contour Line

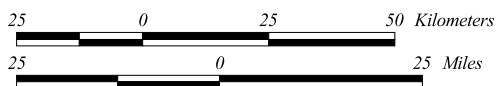
Brown Rockfish, 1993-1999  
Commercial Market  
Catch by Block (lbs.)

- 4,500 - 6,100
- 3,000 - 4,500
- 1,500 - 3,000
- 100 - 1,500

Map based on 1993-1999 PacFIN data (ports),  
& 1993-1999 Commercial Landing Receipts (blocks).

California Department of Fish & Game  
Marine Region GIS Lab  
Jamie Kium, Nancy Wright  
October, 2000

Scale 1 : 1,500,000



## Crescent City



Catch - 6,426 lbs.



Revenue - \$8,482

## Eureka



Catch - 3,090 lbs.



Revenue - \$4,311

Cape Mendocino

Punta Gorda

## Fort Bragg



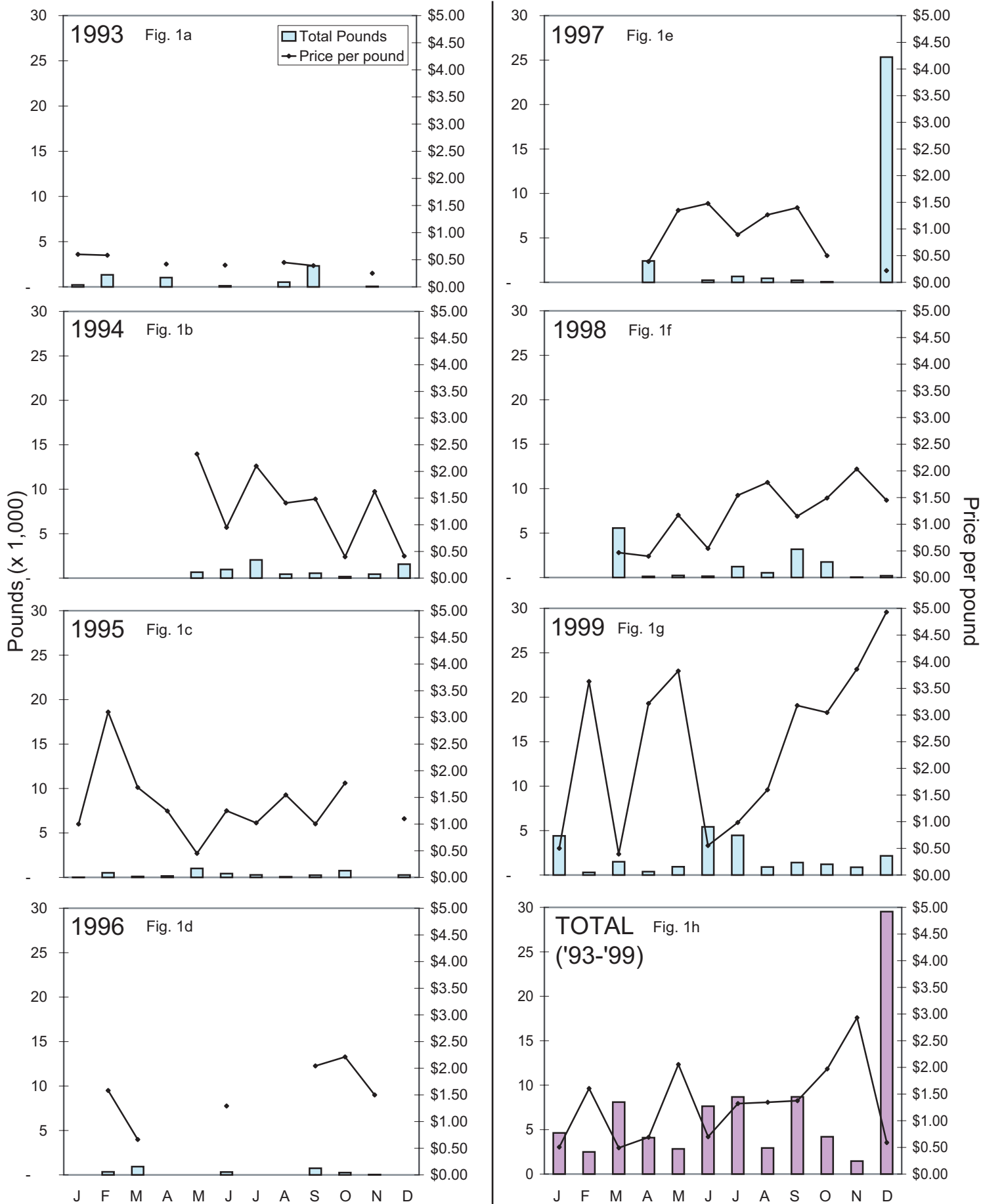
Catch - 5,650 lbs.



Revenue - \$5,578

Point Arena

**Figure 1.** (refer to table 1) CDFG Commercial Receipts Data (1993 - 1999)  
Total Pounds of Brown Rockfish Caught and Average Price per Pound by Month



**Table 1.** (refer to fig. 1) CDFG Commercial Receipts Data (1993 - 1999)  
Total Pounds of Brown Rockfish Caught and Average Price per Pound by Month

**1993**  
Table 1a

Month	Total Pounds	Price per Pound
Jan	213	\$0.60
Feb	1,336	\$0.58
Mar	no data	no data
Apr	1,026	\$0.42
May	no data	no data
Jun	118	\$0.40
Jul	no data	no data
Aug	522	\$0.45
Sep	2,323	\$0.39
Oct	no data	no data
Nov	55	\$0.25
Dec	no data	no data
<b>Total</b>	<b>5,593</b>	<b>\$0.45</b>

**1997**  
Table 1e

Month	Total Pounds	Price per Pound
Jan	no data	no data
Feb	no data	no data
Mar	no data	no data
Apr	2,406	\$0.39
May	3	\$1.35
Jun	235	\$1.48
Jul	665	\$0.89
Aug	450	\$1.27
Sep	227	\$1.40
Oct	67	\$0.50
Nov	no data	no data
Dec	25,338	\$0.22
<b>Total</b>	<b>29,392</b>	<b>\$0.29</b>

**1994**  
Table 1b

Month	Total Pounds	Price per Pound
Jan	no data	no data
Feb	no data	no data
Mar	no data	no data
Apr	no data	no data
May	659	\$2.33
Jun	969	\$0.95
Jul	2,047	\$2.10
Aug	447	\$1.41
Sep	550	\$1.48
Oct	170	\$0.40
Nov	447	\$1.62
Dec	1,565	\$0.41
<b>Total</b>	<b>6,854</b>	<b>\$1.41</b>

**1998**  
Table 1f

Month	Total Pounds	Price per Pound
Jan	no data	no data
Feb	no data	no data
Mar	5,568	\$0.47
Apr	131	\$0.40
May	230	\$1.17
Jun	148	\$0.55
Jul	1,226	\$1.54
Aug	538	\$1.78
Sep	3,180	\$1.15
Oct	1,749	\$1.49
Nov	42	\$2.03
Dec	200	\$1.45
<b>Total</b>	<b>13,012</b>	<b>\$0.96</b>

**1995**  
Table 1c

Month	Total Pounds	Price per Pound
Jan	9	\$1.00
Feb	518	\$3.10
Mar	102	\$1.69
Apr	158	\$1.24
May	1,009	\$0.45
Jun	423	\$1.25
Jul	276	\$1.02
Aug	78	\$1.55
Sep	252	\$1.00
Oct	752	\$1.77
Nov	no data	no data
Dec	267	\$1.10
<b>Total</b>	<b>3,843</b>	<b>\$1.36</b>

**1999**  
Table 1g

Month	Total Pounds	Price per Pound
Jan	4,406	\$0.50
Feb	295	\$3.63
Mar	1,494	\$0.39
Apr	375	\$3.22
May	928	\$3.82
Jun	5,415	\$0.55
Jul	4,461	\$0.99
Aug	899	\$1.60
Sep	1,404	\$3.18
Oct	1,204	\$3.05
Nov	879	\$3.86
Dec	2,152	\$4.93
<b>Total</b>	<b>23,911</b>	<b>\$1.65</b>

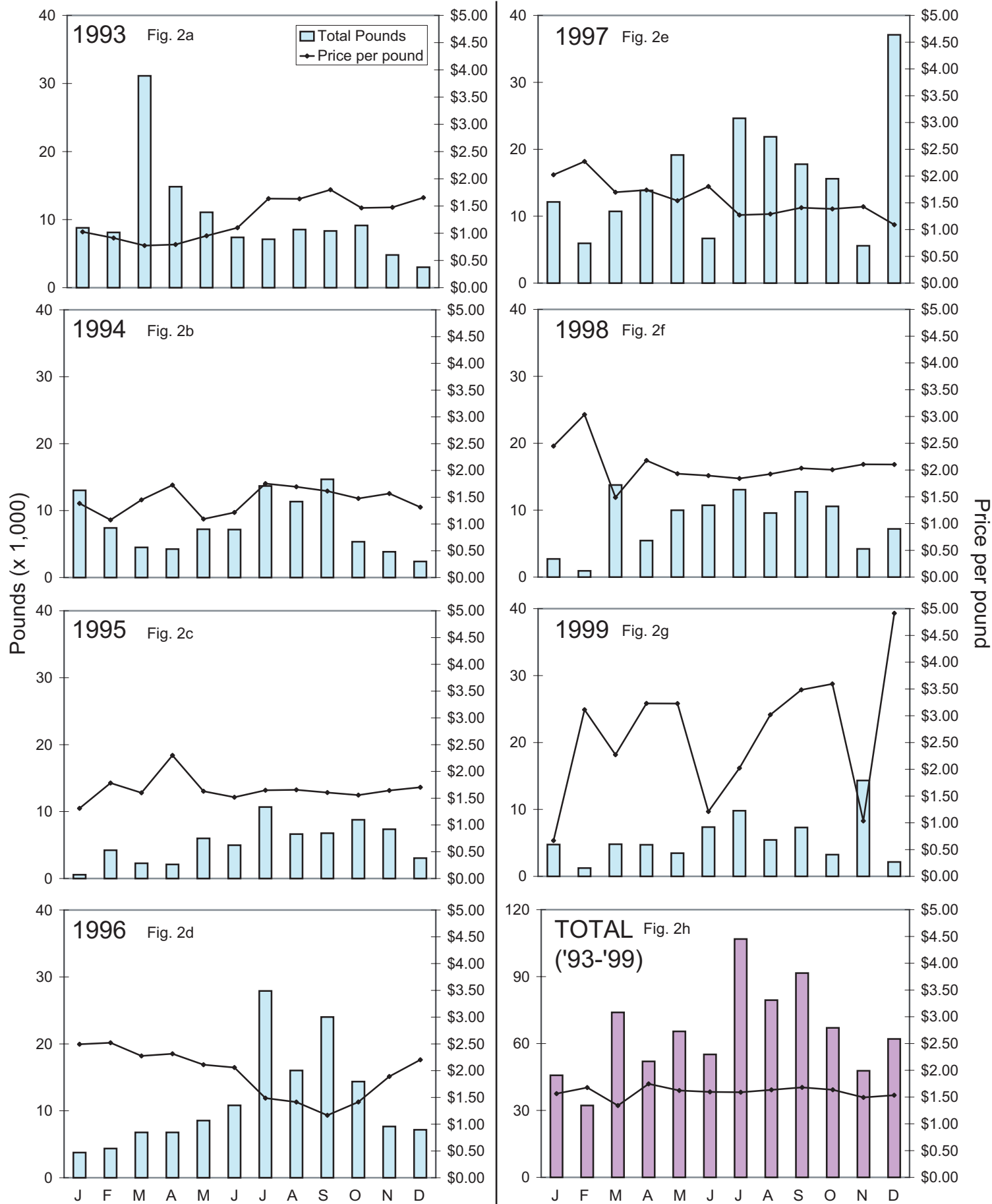
**1996**  
Table 1d

Month	Total Pounds	Price per Pound
Jan	no data	no data
Feb	340	\$1.58
Mar	933	\$0.66
Apr	no data	no data
May	no data	no data
Jun	321	\$1.29
Jul	no data	no data
Aug	no data	no data
Sep	748	\$2.04
Oct	254	\$2.21
Nov	33	\$1.50
Dec	no data	no data
<b>Total</b>	<b>2,629</b>	<b>\$1.41</b>

**TOTAL**  
**'93 - '99**  
Table 1h

Month	Total Pounds	Price per Pound
Jan	4,628	\$0.51
Feb	2,489	\$1.60
Mar	8,097	\$0.49
Apr	4,096	\$0.69
May	2,829	\$2.05
Jun	7,629	\$0.70
Jul	8,675	\$1.32
Aug	2,934	\$1.35
Sep	8,684	\$1.37
Oct	4,196	\$1.97
Nov	1,455	\$2.93
Dec	29,522	\$0.59
<b>Total</b>	<b>85,234</b>	<b>\$0.96</b>

**Figure 2.** (refer to table 2) Pacific Fisheries Information Network Data (1993 - 1999)  
Total Pounds of Brown Rockfish Caught and Average Price per Pound by Month





**Table 2.** (refer to fig. 2) Pacific Coast Fisheries Information Network Data (1993 - 1999)  
Total Pounds of Brown Rockfish Caught and Average Price per Pound by Month

**1993**  
Table 2a

Month	Total Pounds	Price per Pound
Jan	8,797	\$1.02
Feb	8,116	\$0.91
Mar	31,124	\$0.77
Apr	14,837	\$0.79
May	11,075	\$0.95
Jun	7,395	\$1.10
Jul	7,111	\$1.64
Aug	8,545	\$1.63
Sep	8,331	\$1.80
Oct	9,146	\$1.47
Nov	4,803	\$1.47
Dec	3,004	\$1.65
<b>Total</b>	<b>122,284</b>	<b>\$1.12</b>

**1997**  
Table 2e

Month	Total Pounds	Price per Pound
Jan	12,123	\$2.02
Feb	5,946	\$2.27
Mar	10,719	\$1.70
Apr	13,852	\$1.74
May	19,150	\$1.54
Jun	6,669	\$1.81
Jul	24,621	\$1.27
Aug	21,864	\$1.29
Sep	17,766	\$1.41
Oct	15,599	\$1.39
Nov	5,583	\$1.43
Dec	37,094	\$1.09
<b>Total</b>	<b>190,986</b>	<b>\$1.45</b>

**1994**  
Table 2b

Month	Total Pounds	Price per Pound
Jan	13,023	\$1.38
Feb	7,409	\$1.07
Mar	4,495	\$1.45
Apr	4,253	\$1.73
May	7,216	\$1.09
Jun	7,169	\$1.21
Jul	13,681	\$1.75
Aug	11,342	\$1.69
Sep	14,675	\$1.61
Oct	5,346	\$1.48
Nov	3,851	\$1.57
Dec	2,391	\$1.31
<b>Total</b>	<b>94,851</b>	<b>\$1.48</b>

**1998**  
Table 2f

Month	Total Pounds	Price per Pound
Jan	2,721	\$2.45
Feb	930	\$3.04
Mar	13,766	\$1.49
Apr	5,462	\$2.18
May	9,987	\$1.93
Jun	10,733	\$1.90
Jul	13,058	\$1.84
Aug	9,576	\$1.93
Sep	12,739	\$2.03
Oct	10,564	\$2.00
Nov	4,209	\$2.11
Dec	7,201	\$2.10
<b>Total</b>	<b>100,946</b>	<b>\$1.93</b>

**1995**  
Table 2c

Month	Total Pounds	Price per Pound
Jan	560	\$1.31
Feb	4,227	\$1.78
Mar	2,277	\$1.60
Apr	2,106	\$2.30
May	5,992	\$1.63
Jun	4,972	\$1.52
Jul	10,674	\$1.65
Aug	6,639	\$1.66
Sep	6,769	\$1.61
Oct	8,772	\$1.56
Nov	7,357	\$1.64
Dec	3,050	\$1.70
<b>Total</b>	<b>63,395</b>	<b>\$1.65</b>

**1999**  
Table 2g

Month	Total Pounds	Price per Pound
Jan	4,755	\$0.67
Feb	1,238	\$3.11
Mar	4,810	\$2.27
Apr	4,722	\$3.23
May	3,471	\$3.23
Jun	7,363	\$1.21
Jul	9,805	\$2.02
Aug	5,445	\$3.02
Sep	7,298	\$3.48
Oct	3,241	\$3.59
Nov	14,325	\$1.03
Dec	2,155	\$4.91
<b>Total</b>	<b>68,628</b>	<b>\$2.22</b>

**1996**  
Table 2d

Month	Total Pounds	Price per Pound
Jan	3,762	\$2.49
Feb	4,359	\$2.52
Mar	6,776	\$2.27
Apr	6,767	\$2.31
May	8,540	\$2.11
Jun	10,808	\$2.06
Jul	27,902	\$1.49
Aug	16,025	\$1.41
Sep	24,009	\$1.17
Oct	14,367	\$1.41
Nov	7,657	\$1.89
Dec	7,159	\$2.20
<b>Total</b>	<b>138,131</b>	<b>\$1.70</b>

**TOTAL**  
**'93 - '99**  
Table 2h

Month	Total Pounds	Price per Pound
Jan	45,741	\$1.56
Feb	32,225	\$1.68
Mar	73,967	\$1.34
Apr	51,999	\$1.75
May	65,431	\$1.62
Jun	55,109	\$1.60
Jul	106,852	\$1.59
Aug	79,436	\$1.64
Sep	91,587	\$1.68
Oct	67,035	\$1.64
Nov	47,785	\$1.49
Dec	62,054	\$1.54
<b>Total</b>	<b>779,221</b>	<b>\$1.59</b>

## **Abbreviated Life History of Brown Rockfish (*Sebastes auriculatus*)**

Brown rockfish are a common nearshore rockfish species in California. They, as their name implies, are brown in color with darker brown mottling.

### ***Distribution, Stock Structure and Migration***

Brown rockfish are found along the Pacific coast of North America from southeast Alaska to Hipolito Bay, central Baja California. They live in shallow waters and bays, and have been found as deep as 420 ft, although they are primarily found in waters less than 175 ft. Sub-adult and adult brown rockfish are residential, although they migrate into deeper water in the winter. Brown rockfish have a home range and tagging studies generally show no movement or movements of less than 2 km, although one tagging study showed a brown rockfish moving more than 50 km.

### ***Age and Growth***

Brown rockfish live less than 25 yr, which is a relatively short life span compared to other members of the genus. The maximum size for an adult is 22 inches. There does not appear to be sexual dimorphism between male and female brown rockfish in relation to length, weight, or age.

### ***Reproduction, Fecundity and Seasonality***

Male and female brown rockfish mature from 3 to 10 yr of age, measuring 7.5 in. and 15 in., respectively. Half of the population is mature at 5 yr of age, measuring about 10 inches. As with all members of the genus *Sebastes*, brown rockfish are viviparous. Larvae are released from the female into the pelagic environment in December and January, and may also be released in May and June. They live in the upper zooplankton layer for a month and then metamorphose into pelagic juveniles. The pelagic juveniles spend three to six months in the water column as plankton and micronekton. As they grow older, they settle in shallow water nearshore and then migrate to deeper water. Young-of-the-year fish commonly migrate into bays and estuaries for use as nursery habitat. The use of the bay as a nursery is an uncommon practice for rockfish species. They may remain in the bay around rocks, piers and other structures in areas of higher salinity for one to two years before returning to the open coast. San Francisco Bay appears to be an important habitat for juvenile brown rockfish.

### ***Natural Mortality***

A natural mortality rate (M) was calculated to be 0.112 for

brown rockfish from Puget Sound, Washington.

***Diseases***

No information on disease in brown rockfish was found.

***Predator/Prey  
Relationships***

As brown rockfish grow, they feed on increasingly larger prey. As juveniles they feed on small crustaceans, amphipods, and copepods, but at approximately five inches shift to crabs and small fish. Birds, dolphins, seals, sharks, lingcod, cabezon, and salmon have been observed to feed on juvenile and adult brown rockfish.

***Competition***

There was no information available on brown rockfish competitors.

***Critical Habitat***

Brown rockfish are typically found associated with sand-rock interfaces and rocky bottoms of artificial and natural reefs over a fairly wide depth range, and in eelgrass beds. In shallow waters, they are associated with rocky areas and kelp beds, while in deeper waters they stay near the rocky bottom. Sub-adults migrate into both high and low relief reefs and are strongly residential to their home sites.

***Status of Stocks***

Brown rockfish have long been an important component of the marine recreational fishery and a relatively minor but important component of the nearshore commercial fishery in California, especially north of Point Conception. While there have been studies of local abundance in certain coastal areas and within bays, the population size and structure of this species has not been comprehensively assessed.

The brown rockfish has been identified as a species vulnerable to severe localized depletions in other areas; in Washington state, the Puget Sound stock of brown rockfish was recommended for listing as a threatened species in 1999.